

REMARKS

Claims 1 and 11-20 are pending in this application. Claims 11-20 are rejected. Claims 11, 12 and 15 are herein amended. Attached hereto is a marked-up version of the changes made to the claims by the current amendment, captioned "Version with Markings to Show Changes Made."

Rejections under 35 U.S.C. §102(b)

Claims 11-20 are rejected under 35 U.S.C. §102(b) as being anticipated by JP 8283557 to Masao (JP '557).

The Examiner concludes that the material of JP '557 is expected to inherently possess the instantly claimed broad Tg because it is soft and flexible, which indicates a low Tg. The same polyester molecule reads on both components III and IV and the same polyester can be divided in any manner without affecting the composition properties.

Applicants respectfully disagree with the above rejection, because not all of the claimed limitations, as herein amended, are taught by the cited reference.

Initially, Applicants direct the attention of the Examiner to the attachment to the Amendment submitted on October 30, 2002, entitled, "Experiments to Compare the Present Invention and JP 8-283557".

Furthermore, Applicants note that a polyester composition according to the present invention composed of a lactic acid polyester (III) containing a polylactic acid (V) and an agent imparting impact resistance (IV), wherein an agent imparting impact resistance (IV) has a lactic acid unit (I) and a polyester component (II) at a weight ratio within the range of 10:90 to 90:10, a weight average molecular weight of 10,000 or more, a glass transition temperature of 60°C or below, and lactic acid polyester (III) includes a block copolymer composed of lactic acid or lactide, and polyester including hydroxyl groups on both terminals.

On the other hand, Applicants note that JP '557 discloses a polylactic acid composition prepared by mixing a polymer (A) formed mainly from lactic acid with a plasticizer (B) constituted mainly of an aliphatic polyester, and a polylactic acid composition being a block copolymer of polymer (A) formed mainly from lactic acid block copolymerizing aliphatic polyester to polylactic acid.

Applicants note that the present invention is characterized in that compatibility of the polylactic acid (V) and the lactic acid polyester (III) is improved by copolymerizing the lactic acid polyester (III) constituting an agent imparting impact resistance (IV) with a lactic acid unit (I) which is the same as a lactic acid unit of the polylactic acid (V), that is, polylactic acid or lactide, so that the above-described lactic acid polyester (III) functions effectively. This characteristic is different from JP '557.

The lactic acid unit (I) in the lactic acid polyester (III) is compatible segment to the polylactic acid (V), and polyester unit (II) functions as a plasticizer segment.

On the other hand, Applicants note that JP '557 discloses that approximation of molecular structures of the polymer (A) and the plasticizer (B), and compatibility of the polymer (A) and the plasticizer (B) are improved by copolymerizing an aliphatic dicarboxylic acid and a linear diol which are the same or similar to components constituting the plasticizer (B), which are used as copolymerizable components, with the polymer (A) mainly including lactic acid, so that a plasticizer (B) constituted of the above-described aliphatic polyester functions effectively.

The plasticizer (B) unit in the polymer (A) mainly including lactic acid also acts as a compatible segment.

The approximation of molecular structures of the polymer (A) and the plasticizer (B) is described in [0023] of column 5 to [0026] of column 6 on page 4 in the Japanese specification of JP '557, wherein the polymer (A) mainly includes lactic acid and the plasticizer (B) is constituted of the aliphatic polyester mainly including aliphatic dicarboxylic acid and linear diol. Since molecular structures which approximate each other are introduced into the polymer (A) and the plasticizer (B), miscibility, degree of plasticity, transparency, and the like are improved.

Furthermore, in [0014] of column 3 on page 3 in the Japanese specification of JP '557, the following passage is recited.

“The copolymerization of above-described copolymerizable with a lactic acid or polylactic acid can be provided by either of a random copolymerization or a block copolymerization. However, a block copolymerization is specifically preferred so as to minimize crystalline properties, increase of melting point, heat resistance, and the like. A block copolymer in which polylactic acid segments (block) and polymerizing copolymerizable components

beforehand to prepare a polymer of oligomer having hydroxyl at terminals of a molecule, and polymerizing lactide in which the hydroxyl group terminals are used as polymerization initiating points.”

The above-described block copolymer is mixed with a plasticizer corresponding to the plasticizer (B) of the present invention. However, it is not described that the plasticizer is block-copolymerized. Therefore, because at least this limitation is not taught by the cited reference, Applicants submit that the claimed invention can not be anticipated by the cited reference.

Claims 11-20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,844,066 Kakizawa.

The Examiner asserts that the polyesters of the cited reference otherwise meet the limitations of the instant claims, and they are therefore expected to necessarily inherently possess the other properties of the instant claims, particularly where the instant claimed ranges are extremely broad and are therefore more likely to encompass the polymer of the cited reference.

Applicants note that Kakizawa does not disclose a composition at a weight ratio within the specifically claimed range as described in the claims of the present application. Therefore, because at least this limitation is not taught by the cited reference, Applicants submit that the claimed invention can not be anticipated by the cited reference.

Claims 11-20 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,225,671 Ebato et al.

U.S. Patent Application Serial No. 09/926,576

Applicants note that Ebato et al. does not appear to disclose a composition at a weight ratio within the specifically claimed range as described in the claims of the present application. Therefore, because at least this limitation is not taught by the cited reference, the rejection should be withdrawn. Moreover, Applicants note that Kakizawa discloses a process for preparation of a lactic acid based polyester. However, the polyester composition of the present invention according to any one of claims 11 to 20 is not disclosed in any citations.

Claims 11-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over each of U.S. Patent No. 5,616,657 to Imamura et al., U.S. Patent No. 5,844,066 to Kakizawa, and U.S. Patent No. 5,525,671 to Ebato et al. in view of U.S. Patent No. 6,144,495 to Kolstad et al.

The Examiner asserts that Imamura et al., Kakizawa, and Ebato et al. each disclose the above discussed compositions, the fact that lowering Tg is desired, i.e., softness is desired, and that plasticizers, including polyester plasticizers may be used.

The Examiner concludes that it would have been obvious to add the instantly claimed polyester to the claimed polymer composition in order to lower Tg and thereby improve impact resistance, as discussed above, because Kolstad shows that lowering Tg will give increased flexibility, the primary references show addition of monomers that lower Tg to polylactides, and the use of these polylactides in polymer mixtures will lower the Tg as would have been expected by the ordinary skilled artisan and is predictable by the Fox Tg equation.

U.S. Patent Application Serial No. 09/926,576

Applicants respectfully disagree with the rejection. Applicants note that Imamura et al, Kakizawa, and Ebato et al. disclose a process for preparation of a lactic acid based polyester.

Claims 11, 12 and 15 are herein amended. Applicants note that the claimed invention, as herein amended, is not suggested by the cited references.

Moreover, with respect to Kolstad et al., Applicants submit the following remarks.

Applicants note that a plasticizer disclosed in lines 43 to 65 of column 19 in Kolstad et al. corresponds to the agent imparting impact resistance (IV), that is, lactic acid polyester (III) of the present invention.

However, a lactic acid polyester prepared by block-copolymerizing lactic acid units and polyester units is not disclosed in Kolstad et al.

Therefore, Applicants respectfully submit that the limitations of claims 11 to 20 of the present invention differ from the invention of Kolstad et al., and Applicants therefore request that the rejection be withdrawn.

In view of the aforementioned amendments and accompanying remarks, Applicants respectfully submit that claims 1 and 11-20, as herein as amended, are in condition for allowance. Applicants earnestly request withdrawal of the rejections and passage of the claims to issue.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. 09/926,576

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees that may be due with respect to this paper to Deposit Account No. 01-2340.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Enclosure: Version with Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE
Serial No. 09/926,576

IN THE CLAIMS:

Please amend the claims as follows:

11. (Amended) A polyester composition composed of a lactic acid polyester (III) containing ~~polyhydroxy-carboxylic~~ polylactic acid (V) and an agent imparting impact resistance (IV), wherein an agent imparting impact resistance (IV) has a lactic acid unit (I) and a polyester component (II) at a weight ratio within the range of 10:90 to 90:10, a weight average molecular weight of 10,000 or more, ~~and~~ a glass transition temperature of 60°C or below, and the lactic acid polyester (III) comprises a block copolymer composed of lactic acid or lactide, and polyester comprising hydroxyl groups on both terminals.

12. (Amended) The polyester composition according to claim 11, wherein a proportion of the lactic acid polyester (III) and ~~polyhydroxy-carboxylic~~ polylactic acid (V) is within a range of a weight ratio of 3.97 to 70:30.

15. (Amended) The polyester composition according to claim 11, wherein the weight average molecular weight of the ~~polyhydroxy-carboxylic~~ polylactic acid (V) is 50,000 or more.